

CLAIMS

What is claimed is:

1. A hinge apparatus to open and close a cover of an image forming apparatus, which pivotably connects the cover to a main body of the image forming apparatus, to expose and cover a document glass, the hinge apparatus comprising:

a hinge body movably inserted in a first direction into a coupling hole positioned in the main body of the image forming apparatus, and having supporting brackets;

a hinge cam, connected to the cover, and pivotably connected to the supporting brackets; and

a pressure device disposed at the hinge body to press the hinge cam.

2. The hinge apparatus of claim 1, wherein:

the hinge body is provided with a housing chamber; and

the pressure device comprises

a pusher disposed in the housing chamber, that protrudes from the housing chamber, and

a spring disposed within the housing chamber to press the pusher.

3. The hinge apparatus of claim 1, wherein the hinge cam comprises:

a body portion connected to the cover; and

a cam part that pivots in close contact with the pressure device.

4. The hinge apparatus of claim 3, wherein:

the cam part and each of the supporting brackets are provided with a shaft hole, respectively, and

the hinge apparatus further comprises a hinge shaft inserted through the respective shaft holes, to pivotably connect the cam part to the supporting brackets.

5. The hinge apparatus of claim 4, wherein:

a center of the hinge shaft is located toward the document glass compared to a pressure central line of the pressure device.

6. The hinge apparatus of claim 2, wherein:
 - the pusher comprises a locking protrusion;
 - the hinge body is provided with a guide slot; and
 - the locking protrusion is inserted into the guide slot, and prevents the release of the pusher from the hinge body.
7. The hinge apparatus of claim 1, wherein the hinge body comprises:
 - a first protrusion positioned at one side of the hinge body, to prevent the supporting brackets from entering the coupling hole.
8. The hinge apparatus of claim 1, wherein:
 - the main body comprises a hooking portion positioned at one side of the main body of an image forming apparatus; and
 - the hinge body comprises a second protrusion positioned at a first side of the hinge body, that is caught by the hooking portion, thereby preventing the release of the hinge body from the coupling hole when the hinge body is moved in a direction opposite the first direction.
9. The hinge apparatus of claim 2, wherein:
 - the pusher is made of a lubricating resin.
10. The hinge apparatus of claim 1, wherein:
 - the hinge cam is made of a lubricating resin.
11. A hinge apparatus rotatably connecting a cover and a main body, the hinge apparatus comprising:
 - a hinge body, with a void therein and a supporting bracket, movable in an opening in the main body;
 - a pressure device, movable within the void, and biased toward a first end of the hinge body; and
 - a hinge cam, connected to the cover, rotatably connected to the supporting bracket, and slidably engaging the pressure device.
12. The hinge apparatus according to claim 11, wherein:

the hinge cam and the supporting bracket each have a shaft hole; and
the hinge apparatus further comprises a hinge shaft inserted through the shaft holes of the hinge cam and the supporting bracket, to rotatably connect the hinge cam and the supporting bracket.

13. The hinge apparatus according to claim 12, wherein:
the hinge shaft is provided with at least one groove portion; and
the hinge apparatus further comprises at least one coupling ring, fixed to the at least one groove portion, to maintain a position of the hinge shaft with respect to the shaft holes of the hinge cam and the supporting bracket.

14. The hinge apparatus according to claim 11, wherein:
a protrusion is provided on one of the hinge cam and the supporting bracket; and
a receiving part receiving the protrusion is provided on the remaining one of the hinge cam and the supporting bracket, to rotatably connect the hinge cam and the supporting bracket.

15. The hinge apparatus according to claim 11, wherein:
the hinge body comprises a first protrusion, to limit an amount the hinge body moves into the opening in the main body.

16. The hinge apparatus according to claim 15, wherein:
the opening in the main body is provided with a hooking portion; and
the hinge body comprises a second protrusion, to limit an amount the hinge body moves out of the opening in the main body.

17. The hinge apparatus according to claim 11, wherein:
the pressure device comprises a pusher and a biasing element that biases the pusher toward the first end of the hinge body; and
the hinge body comprises a biasing element support,
wherein a first end of the biasing element engages a first end of the pusher, and a second end of the biasing element engages the biasing element support.

18. The hinge apparatus according to claim 17, wherein

the pusher comprises a locking protrusion; and
the hinge body comprises a wall with a guide slot,
wherein the locking protrusion is inserted into the guide slot, to guide and limit
movement of the pusher within the void of the hinge body.

19. The hinge apparatus according to claim 18, wherein:
a location of the guide slot is defined to prevent the pusher from being released from the
hinge body.

20. The hinge apparatus according to claim 18, wherein:
the biasing element comprises a spring; and
a length of the spring is defined as approximately a distance between the first end of the
pusher and the spring support, when the locking protrusion of the pusher contacts a side of the
slot nearest the first end of the hinge body.

21. The hinge apparatus according to claim 17, wherein:
at least one of the pusher and the hinge cam are made of a lubricating resin.

22. The hinge apparatus according to claim 11, wherein the hinge cam comprises:
a body portion connected to the cover; and
a cam part slidably engaging the pressure device.

23. The hinge apparatus according to claim 22, wherein:
the body portion and the cam part are integrally formed.

24. The hinge apparatus according to claim 12, wherein:
a center of rotation of the hinge shaft is offset by a predetermined distance from a line
along which a center of the pressure device moves, to inhibit rotation of the hinge cam.

25. An apparatus having a cover and a main body connected by the hinge apparatus
of claim 11.

26. A hinge apparatus, rotatably connecting a cover and a main body, the hinge apparatus comprising:

a hinge body with a supporting bracket, moveably inserted into a cavity in the main body;

a hinge cam connected to the cover and pivotably connected to the supporting bracket;

and

a pressure device, disposed at the hinge body to press the hinge cam and inhibit rotation of the hinge cam.